

CLAIM AMENDMENTS

Claim Amendment Summary

Claims pending

- Before this Amendment: Claims 1-21.
- After this Amendment: Claims 1-21

Non-Elected, Canceled, or Withdrawn claims: none

Amended claims: 1, 4-7, 12, 17 and 20

New claims: none

Claims:

1. (Currently Amended) One or more computer-readable media comprising encoded with computer-executable instructions that perform the following when executed by a computer:

receiving incoming packets of data and metadata, wherein the metadata comprises a synchronization information part and a linear combination coefficients part;

synchronizing the incoming packets; and

linearly combining the data and the linear combination coefficients part of the metadata of each of synchronized incoming packets into a new data portion of an outgoing packet, and inserting in a new metadata portion that is part of the outgoing packet, new linear combination coefficients that identify the data

and the linear combination coefficients part of the metadata of the synchronized incoming packets.

2. **(Original)** The computer-readable media of claim 1, further comprising:
sending the outgoing packet.
3. **(Original)** The computer-readable media of claim 1, further comprising
including synchronization information in the metadata of the outgoing packet.
4. **(Currently Amended)** The computer-readable media of claim 1, wherein
the synchronizing includes reading the synchronization information from the
metadata, the synchronization information including a sequence number.
5. **(Currently Amended)** The computer-readable media of claim 1, wherein
the synchronizing includes reading the synchronization information from the
metadata, the synchronization information including time slots, wherein the
incoming packets having matching time slots are deemed synchronized.
6. **(Currently Amended)** The computer-readable media of claim 1, wherein
the synchronizing includes reading the synchronization information from the
metadata.
7. **(Currently Amended)** The computer-readable media of claim 1, further
comprising:

receiving the outgoing packet and other outgoing packets;
synchronizing the outgoing packet and the other outgoing packets;
linearly combining the new data portion of the outgoing packets into a second generation outgoing packet;
inserting in a second generation metadata portion that is part of the second generation outgoing packet, linear combination coefficients that identify each new data portion of synchronized outgoing packets; and
sending the second generation outgoing packet of data.

8. (Original) The computer-readable media of claim 1, wherein the data of each of the incoming packets includes one or more parts, or a linear combination of one or more parts, of a set of data and further comprising recording, within the outgoing packet, a complete linear combination of the set of data that is present within the outgoing packet.

9. (Original) The computer-readable media of claim 1, wherein the data of each of the incoming packets includes one or more vectors, or a linear combination of one or more vectors, of a set of data vectors and further comprising recording, within the outgoing packet, coefficients representing all linear combinations of the set of data vectors present within the data of the outgoing packet.

10. (Original) The computer-readable media of claim 1, wherein the data of each of the incoming packets includes one or more vectors, or a linear

combination of one or more vectors, of a set of data vectors and further comprising recording, within the outgoing packet, information sufficient to disassemble the data in the outgoing packet into the set of data vectors if all but one of each of the vectors in the set of data vectors is known.

11. (Original) The computer-readable media of claim 10, wherein the recording is made into a header of the outgoing packet.

12. (Currently Amended) A system comprising:

a node of a communication network, wherein the node is capable of:

linearly combining data from multiple incoming packets of data into an outgoing packet of data, the data from each of the multiple incoming packets being a linear combination of an original set of data vectors and each of the multiple incoming packets including incoming metadata indicating the linear combination of the original set of data vectors present in each of the multiple incoming packets, wherein the metadata comprises a synchronization information part and a linear combination coefficient part; and

recording into the outgoing packet, based on the linear combination performed on the data and the linear combination coefficient part of the metadata from the multiple incoming packets ~~and the incoming metadata,~~ outgoing metadata indicating the linear combination of the original set of data vectors and the linear combination coefficient part of the metadata present in the outgoing packet.

13. (Original) The system of claim 12, wherein the node is further capable of:

receiving the incoming packets of data; and
sending the outgoing packet of data.

14. (Original) The system of claim 12, wherein the node includes a computer server.

15. (Original) The system of claim 12, wherein the node includes a computer.

16. (Original) The system of claim 12, wherein the node includes a router.

17. (Currently Amended) One or more computer-readable media comprising encoded with computer-executable instructions that perform the following when executed by a computer:

receiving incoming packets of data and metadata, the data of each incoming packet being a linear combination of an original set of data vectors, the data vectors in the original set of data vectors being identically partitioned into a first number of layers of data, wherein at least one of the data vectors contains a layer of data that is set to elements computable from the other data vectors;

determining, based on the metadata in each of the incoming packets, the linear combination of the original set of data vectors that is present within each of the incoming packets; and

inverting the data in each of the incoming packets to obtain a second number of layers of data of the original set of data vectors, wherein the second number is less than the first number.

18. (Original) The computer-readable media of claim 17, wherein the elements computable from the other data vectors are zero.

19. (Original) The computer-readable media of claim 17, wherein the metadata of each incoming packet indicates the linear combination of the original set of data vectors that is present within the incoming packet.

20. (Currently Amended) An apparatus comprising:

means for receiving incoming packets of information, each of the incoming packets having incoming data and incoming metadata, each of the incoming data being a linear combination of an original set of data vectors and each of the incoming metadata indicating the linear combination present in each of the incoming data, wherein the incoming metadata comprises a synchronization information part and a linear combination coefficients part;

means for linearly combining the incoming data and the linear combination coefficients part of the incoming metadata of the incoming packets of information into an outgoing packet of information; and

means for recording outgoing metadata within the outgoing packet, the outgoing metadata indicating a linear combination of the original set of data vectors present in the outgoing data packet.

21. (Original) The apparatus of claim 20, further comprising:

means for disassembling, with aid from the outgoing metadata, the linear combination within the outgoing packet into the original set of data vectors.